REMARKS

This is in response to the Office Action dated October 13, 2009. In view of the foregoing amendments and following representations, reconsideration is respectfully requested.

By the above amendments, claims 2, 5, 10, 11 and 12 are amended; and claim 14 is newly presented. Thus, claims 2, 5, 8-12 and 14 are currently pending in the present application. Support for new claim 14 can be found at least on page 3, lines 14-29 of the specification as originally filed.

Rejection under 35 U.S.C. § 103(a)

On pages 2-3 of the Office Action, claims 2, 5 and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holen (2002/002807070 [sic. 2002/0028070]) in view of Firmin (US 2004/0253734) or Agee et al. (US 2003/0178195). Also, clam 12 is rejected as being unpatentable over Holen in view of Firmin or Agee and further in view of Ness et al. (U.S. Patent No. 6,328,523). It is submitted that the present invention, as embodied by the amended claims, now clearly distinguishes over the applied prior art references for the following reasons.

The present invention is primarily directed to a pipeline remediation situation where the pipeline is plugged with ice (see page 2, lines 17-18). In the present invention, the pipeline is heated by direct electrical heating to remove only a part of the ice plug (page 3, line 26). As the temperature increases, ice is melted closest to the pipeline wall, which increases permeability such that chemical injection and depressurization become possible. Thus, it is not necessary to melt the whole ice plug but only a zone near the pipeline wall sufficient to have the remaining ice and hydrates removed by chemical injection and depressurization (see page 3, line 23 to page 4, line 5).

Furthermore, the formation of an ice plug is considered a significant issue only in regions where the temperature can fall below the freezing point of water (see e.g. page 4, lines 12-13). This situation occurs e.g. in an arctic environment.

The present invention is also primarily covering pipelines with no thermal insulation like the field Ormen Lange in the Norwegian sector of the North Sea (see the example on page 4, line 11-25). Standard coating of the pipeline is sufficient to provide the necessary protection against excessive heat losses. However, the present method could still be used with completely "bare" pipes as it would only be necessary to increase the temperature 1-3 °C.

The latter is a major advantage over the heating system disclosed in the Holen reference in which good thermal insulation is described as an essential part of the system to ensure successful operation (see paragraphs [0014], [0016] and claim 1). A person skilled in the art would hence conclude that the specified service voltage and service current in paragraph [0010] and claims 7 and 8, take into account that thermal insulation is present around the pipelines in question.

This also explains why the system described in the Holen reference may remove hydrate plugs (or wax deposits) by direct electric heating using these fairly moderate power demands.

The necessity of exceeding the melting point of hydrates (using the specified power) in the Holen system is supported by the fact that there is no description in Holen that refers to the possibility of ice plug formation within the pipelines. The reason for this is simply that the occurrence of ice plugs is not considered to be a significant problem in non-arctic environments. Thus, the present invention addresses novel issues due to the increased interest in arctic areas; i.e., areas where the system disclosed in the Holen reference would impose excessive costs and complexity due to the need of thermal insulations. These novel issues are particularly important

in connection with the operation of long pipelines in cold environments such as the two 30" pipelines connected to the field Ormen Lange. As described on page 2, lines 10-13 of the present application: *"However, it has proved to be unduly expensive and comprehensive to implement direct electric heating for pipelines that are situated at large depth or has a smaller degree of thermal isolation, which represents a significant problem."*

To more clearly define the novel features of the present invention, independent claims 5 and 10 have been amended to emphasize that the primary object of the invention is to remove an ice plug within the pipeline blocking the fluid through-put in an energy and cost efficient manner as possible.

Hence, in view of the above, it is submitted that one of ordinary skill in the art, having knowledge of the system disclosed in the Holen reference, *would not be able to perform the required operation of removing ice plugs within long pipelines and/or cold environments without the use of costly thermal insulation.*

The Examiner takes the position that it would have been obvious to employ the chemical injection or depressurization procedures, taught by Firmin or Agee, in the Holen system. The Examiner, however, does not supply any reason for combining the references. The fact that chemical injection and depressurization procedures are known in the art is not a reason to combine the references. The Supreme Court decision in KSR expressly instructs that it remains legally insufficient to conclude that a claim is obvious just because each feature of a claim can be independently shown in the cited art. ***KSR Int'l Co. v. Teleflex, Inc.***, 550 U.S. 398 (2007). KSR requires that an Examiner provide "some articulated reasoning with some rationale underpinning to support the legal conclusion of obviousness." An Examiner must "identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way

the claimed new invention does." And, the Examiner must make "explicit" this rationale, and anything less than such an explicit analysis may not be sufficient to support a prima facie case of obviousness.

Note that Holen, in paragraph [0018], explains that heating section 6 by AC current flow ensures that the crude oil will have a sufficiently low viscosity at the start of oil transportation. Accordingly, it is not clear what application the teachings of Firmin or Agee would have in the environment of Holen.

Independent claim 5 requires, *inter alia*, "applying an electrical voltage over the pipeline between two electrical contacts, thereby causing an electric current to pass through the pipeline to resume or maintain flow of fluid through the pipeline; and subsequently applying a second plug-counteracting procedure to remove any ice or hydrate plug from within the pipeline." Nothing in the prior art teaches the combination of electrical heating and a subsequent second plug-counteracting procedure to remove an ice or hydrate plug from a pipeline.

New dependent claim 14 further requires that "the electrical voltage applied over the pipeline between the electrical contacts is sufficient to melt only part of the ice plug closest to an inner wall of the pipeline, the part of the ice plug forming a zone having a thickness of at least 5 mm closest to the inner wall of the pipeline to allow the flow of the fluid through the pipeline to be resumed or maintained. The melting of only a part of the ice plug to form a zone having a specified thickness is clearly not disclosed or suggested in the prior art of record.

In view of the above, it is submitted that the present application is now clearly in condition for allowance. The Examiner therefore is requested to pass this case to issue.

In the event that the Examiner has any comments or suggestions of a nature necessary to place this case in condition for allowance, then the Examiner is requested to contact Applicant's undersigned attorney by telephone to promptly resolve any remaining matters.

Respectfully submitted,

Keijo J. KINNARI et al.

By _____

Michael S. Huppert
Registration No. 40,268
Attorney for Applicants

MSH/kjf
Washington, D.C. 20005-1503
Telephone (202) 721-8200
Facsimile (202) 721-8250
March 15, 2010